

that during the war about thirty medical officers were given training at the Rockefeller Institute.

Although the naval medical officer's day is usually crowded with official activities his day ends at 4 or 4:30 p. m., and he is able to enjoy evenings and Sundays with his family or friends. There is always time for recreation or the pursuance of a hobby. Often the opportunity for boating, hunting, and fishing such as only the very wealthy may enjoy. Golf, tennis, and baseball may be played in every port. Every ship and station has its motion pictures and other amusements. In addition opportunities for specialization and keeping abreast of the times are at least equal to that enjoyed by the average city physician.

The Naval Reserve is a component part of the United States Navy, and acceptance of membership in the reserve represents mainly an agreement to serve as a commissioned medical officer in the navy in time of war or during a national emergency so declared by the President.

Although members are thus obligated to serve in time of war, and may then be separated from the service only as provided for by the same laws and regulations as apply to officers of the regular navy, in time of peace, on the contrary, an officer may be ordered to active duty or training only with his own consent, he may resign within the discretion of the Secretary of the Navy, and he may not be discharged except for cause. Should an officer, in the course of the physical examination which is required every four years, be found physically disqualified for service he may be honorably discharged or placed on an honorary retired list.

Officers are commissioned in the reserve by the President to serve during his pleasure in the same grades and ranks as do the officers of the regular navy, appointments and promotions being made pursuant to law and in accordance with regulations prescribed by the Secretary of the Navy.

Officers of the reserve of the same rank take precedence among themselves by date of commission. In time of peace they take precedence with but after officers of the regular navy of the same rank. When mobilized in time of war or national emergency, officers of and above the rank of Lieutenant Commander take precedence with all other officers according to the dates of their respective commissions. When performing active duty or its equivalent, or while wearing a naval uniform, officers of the reserve are subject to the laws, regulations, and orders for the government of the navy.

A candidate for appointment as medical officer must apply by letter to the commandant of the naval district in which he is a resident, requesting permission to be examined for appointment in the grade of Assistant Surgeon, rank of Lieutenant Junior Grade, United States Volunteer Naval Reserve. No professional examination is required of a candidate for appointment. His professional qualifications being established by letters and certificates submitted with his application. Letters testifying to his moral character, habits, citizenship, preliminary education, medical education, society membership,

and a license to practice medicine must also accompany his application.

The information here given has necessarily been very brief, so for the benefit of those interested in either the Naval Reserve or the Regular Navy, I might add that I am located at the Navy Recruiting Station in Salt Lake City, and will at all times be glad to give any information on the subject.

CHRONIC ARTHRITIS: ITS TREATMENT WITH EMETIN †

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THE form of arthritis considered most likely to respond to the emetin treatment is that which I have repeatedly discussed as the second great type—osteoarthritis, hypertrophic arthritis, arthritis deformans, degenerative arthritis, etc., as it is generally known. This form of arthritis was formerly attributed to trauma or to bacterial agents, and is still attributed to them by many. I have been unable to accept this conclusion because the study of my specimens convinces me of its inadequacy. The areas of aseptic necrosis in the bone, and the reaction of the marrow about them, indicate the presence of some living organism, the changes one would expect from the protozoa. This hypothesis was supported by the almost invariable accompaniment of infection of the bone at the roots of the teeth. While the tooth is of no direct importance, so-called root disease keeps the door open for the other infectious agent.

I acknowledge that the hypothesis that the ameba causes chronic arthritis has not been proved. Kofoed's reported discovery of ameba histolytica in the bone marrow of one of my specimens has never been confirmed, and satisfactory experimental proof on animals is still lacking.

The percentage of positive finds of protozoa in the stools of my patients with second type arthritis is fairly high, as shown in previous reports. Parasites have been found in the stools of several patients with first type arthritis. Two or three patients with apparently incurable progressive arthritis were cured by antiprotozoal treatment.

My method of handling second type cases is as follows: Every patient is investigated for the presence of alveolar infection. If it is present it is treated. Routine search of five or six stools is being conducted meanwhile. If protozoa be found, the patient gets the full antiparasitic treatment; if not, the neosarsphenamin is omitted.

The full treatment is a course of emetin hydro-

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chloride, interspersed with three doses of neoarsphenamin, and followed by a course of emetin bismuth iodide. Usually twelve daily injections of 1 grain of the emetin hydrochloride are given, followed by 3 grains of emetin bismuth iodide daily for ten days. The neoarsphenamin is given weekly, beginning with a dose of .45 grammes. The second dose is .6 grammes, third .9 in men, .6 in women. All patients are examined before the treatment by physicians in the medical clinic, and I take this opportunity to acknowledge my indebtedness for their co-operation. For reasons to be presently mentioned the period of emetin bismuth iodide has been reduced to six days. During the treatment the patient is kept on a careful diet, and takes no cathartics. The emetin hydrochloride is usually given intravenously, though recently the plan of giving the first dose of half a grain intramuscularly has been adopted. One patient, an elderly and rather feeble man, had an

attack of syncope after the first intravenous dose of 1 grain. This was our only early accident.

As to the effects of emetin:

The healthy adult, especially the male adult, usually has been able to take the full course without apparent harmful effects of the drug. The treatment was administered for about two years without a serious accident. Then one patient, an elderly woman, suffered from a fibrillating heart for several weeks before her death. The necropsy showed arteriosclerosis and myocarditis. At her examination immediately before her treatment her blood pressure was 175/90. She had been a patient at the Stanford clinics for various troubles for some years, and there seemed no contraindication to emetin. Several years previously she had had hypertension and "intestinal intoxication," the latter probably due to an ameba coli infection. She had taken 11.5 grains of emetin hydrochloride—3.5 grains intramuscularly, 8 grains intravenously—and two injections of neoarsphenamin.

Case	Sex	Age	Diagnosis	Parasites	Complications	Treatment	Result
1	M.	51	Type II spine	Am. coli	Alveo. infect.	Emetin Neoarsphen.	Improvement
2	M.	30	Type II spine	None	Alveo. infect.	Emetin	Improvement
3	M.	56	Type II spine and hips	None	Edentulous	Emetin Neoarsphen.	Improvement
4	F.	59	Type II spine	None	Alveo. infect.	Emetin	Improvement
5	M.	55	Type II spine	None	Teeth (?)	Emetin	
6	F.	50	Type II spine	Butchlii	Edentulous	Emetin Neoarsphen.	Treatment discontinued on account of heart and digestive symptoms
7	F.	52	Type II knee	None	Edentulous	Emetin	Extreme muscular weakness followed treatment. Joint improved
8	M.	63	Type II spine	None	Edentulous	Emetin	Marked improvement
9	M.	63	Multiple type II	Iod. Butsch.	Alveo. infect.	Emetin	Treatment not completed
10	M.	59	Type II shoulder	None	Alveo. infect.	Emetin	
11	F.	38	Type II knee	None	No alveo. infect.	Emetin	Improved
12	F.	52	Multiple type II	Am. coli	Alveo. infect.	Emetin Neoarsphen.	Improvement, but great muscular weakness followed treatment
13	M.	38	Type II spine	Am. coli	No alveo. infect. Prostatitis	Emetin Neoarsphen.	Moderate muscular weakness followed
14	M.	74	Type II spine	Am. coli	Teeth (?)	Emetin Neoarsphen.	No improvement
15	F.	40	Type II knee	None	Alveo. infect.	Emetin	Emetin b. i. was not tolerated
16	M.	60	Type II knee	Am. Coli	Alveo. infect.	Emetin Neoarsphen.	No improvement
17	F.	55	Type II spine	Am. hist.	Alveo. infect.	Emetin	Treatment discontinued on account of heart symptoms
18	M.	49	Type II hip	None	Alveo. infect.	Emetin	Marked improvement
19	F.	64	Type II knee	Am. coli Lutschlii Histolyt.	Edentulous	Emetin Neoarsphen.	Improved, but weak after treatment
20	M.	62	Type II Mult.	Am. coli	Alveo. infect.	Emetin Neoarsphen.	
21	M.	43	Type II Mult.	Am. coli	Teeth (?)	Emetin Neoarsphen.	No improvement
22	F.	50	Type II spine	Am. coli	Previous alveo. infect.	Emetin Neoarsphen.	All symptoms disappeared
23	F.	36	Type II spine	None	Previous alveo. infect.	Emetin	
24	M.	43	Type II spine	None	Alveo. infect.	Emetin	No improvement
25	M.	53	Type II spine	None	Alveo. infect.	Emetin	Improvement
26	M.	44	Type II spine	None	Alveo. infect.	Emetin	
27	F.	50	Type II spine	Giardia	Alveo. infect.	Neoarsphen.	Marked improvement.
28	M.	47	Type II spine	None	Edentulous	Emetin	"Much improved"
29	F.	55	Type II spine	Am. coli	Edentulous	Emetin	No improvement
30	F.	61	Type II hands	Am. coli	Edentulous Carcinoma of breast	Emetin	Improved. Treatment discontinued on account of dyspnoea.
31	M.	60	Type II knee	Am. hyst.	Alveo. infect.	Emetin Neoarsphen.	Improved
32	F.	60	Type II spine	Am. coli	Edentulous	Emetin Neoarsphen.	No improvement. Extreme muscular weakness following.
33	F.	60	Type II knee	Am. coli	Previous alveo. infect.	Emetin Neoarsphen.	Pain disappeared, but much muscular weakness followed
34	M.	63	Type II Mult.	Chilomastix	Edentulous, Prostatitis	Emetin	No improvement
35	F.	65	Type II foot	None	Alveo. infect.	Emetin	Great muscular weakness
36	F.	52	Type II knee	None	Edentulous	Emetin	Weakness; improved.
37	M.	60	Type (?) spine	None	Alveo. infect.	Emetin	
38	F.	51	Type II hip	None	Alveo. infect.	Emetin	
39	F.	39	Type II spine	Am. coli	Alveo. infect. Bartholinitis	Emetin	Did not have teeth extracted. Not improved.
40	M.	41	Type II Mult.	Am. coli	Alveo. infect.	Emetin Neoarsphen.	Marked improvement
41	F.	48	Type II Mult.	None	Alveo. infect. Previous carcinoma of the breast	Emetin Neoarsphen.	Improvement
42	F.	40	Type II spine	None	Alveo. infect.	Emetin	No improvement. Did not finish treatment. Five injections only

Case	Sex	Age	Diagnosis	Parasites	Complications	Treatment	Result
43	F.	45	Type II knee	None	Alveo. infect.	Emetin	Improvement. Muscular weakness followed treatment
44	M.	25	Type II spine	Am. coli.	Alveo. infect.	Emetin	Treatment not completed
45	F.	49	Type II spine	End. nana	Alveo. infect.	Emetin	
46	F.	60	Type II shoulder	Am. coli	Edentulous	Neoarsphen.	Improvement
47	F.	74	Type II knee	Am. coli	Edentulous	Emetin	
48	F.	57	Type II knee	Am. coli	Edentulous	Neoarsphen.	Extreme muscular weakness followed treatment
49	F.	43	Type II knee	None	Alveo. infect.	Emetin	Improvement. Muscular weakness followed treatment
50	F.	46	Type II Mult.	Am. coli	Alveo. infect.	Emetin	
51	M.	53	Type II Mult.	End. nana Giardia.	Edentulous Migraine	Neoarsphen. Emetin	Marked improvement
52	M.	56	Type II spine	Chilomastix		Neoarsphen.	Improvement. Migraine also improved. Marked cardiac reaction to emetin
53	M.	55	Type II spine	None	Previous alveo. infect. Infectious antrum	Emetin	Emetin intermitted act. falling blood pressure. Functional cure
54	M.	51		Am. coli	Infectious antrum	Emetin	
55	F.	36	Type I Mult.	Am. coli	Edentulous	Neoarsphen.	Em. bis. iod. discontinued on account of low blood pressure. Slight improvement
56	M.	48	Type I Mult.	Am. histolytica?	Alveo. infect.	Emetin	
57	F.	40	Type I Mult.	None	Edentulous, ischio-rectal abscess	1 neoarsphen.	Improved
58	F.	51	Type II Mult.	None	Alveo. infect.	Emetin	
59	M.	50	Type I knee	None	Alveo. infect.	Emetin	
60	M.	64	Type II feet	None	No alveo. infect.	Neoarsphen.	Treatment discontinued on account of weak heart. Improvement
61	F.	49	Type II knee	None	Alveo. infect.	Emetin	No improvement. Symptoms probably due to intermittent claudication
62	F.	55	Type II knees	None	Edentulous	Emetin	No improvement. Would not have teeth extracted
63	F.	53	Type (?) foot	Am. coli	Alveo. infect.	Emetin	Treatment discontinued on account of rapid pulse, and muscular weakness
64	F.	26	Type I Mult.	None	Edentulous	Neoarsphen.	Improvement
65	M.	68	Type II feet	Am. coli, Iod. Butsch.	Edentulous	Emetin	Marked improvement. This was one of the cases usually considered hopeless
66	M.	26	Type II Mult.	Am. coli	Hallux valgus	Neoarsphen.	
67	F.	60	Type II Mult.	Am. coli	Alveo. infect.	Emetin	Improved. Patient also had other treatment
68	F.	68	Type I Mult.	None	Edentulous	Emetin	Death (cardiac)
69	F.	63	Type I Mult.	Am. coli	Edentulous	Neoarsphen.	
70	F.	12	Type I hips	Chilomastix Giardia Trichomonas	No alveo. infect.	Emetin	Improvement. Tonsillectomy
71	F.	59	Type II Mult.	Histolytica	Alveo. infect.	Tonsillec- tomy	Recovery. Return of symptoms after two years; hystolytica found
72	M.	43	Type II Mult.	Am. histolytica	No alveo. infect.	Emetin	Marked improvement
73	F.	59	Type II spine	None	No alveo. infect.	Neoarsphen.	No improvement
74	F.		Type II spine	Am. coli	Alveo. infect.	Emetin	No improvement. Would not have teeth extracted
75	F.	34	Type I Mult.	Am. histolytica	Alveo. infect.	Emetin	Slightly improved. Treatment discontinued on account of muscular weakness
76	F.	65	Type II knee	None	Alveo. infect.	Neoarsphen.	Cure. An apparently hopeless case
77	M.	50	Type II spine	Am. coli	Alveo. infect.	Emetin	No improvement. Treatment could not be carried out continuously on account of marked muscular weakness
78	F.	35	Type II spine	?	Alveo. infect.	Thyroid	Marked improvement
79	M.	38	Type I Mult.	Giardia	Alveo. infect.	Emetin	Cure. (Symptomatically)
80	M.	40	Spine type ?	Lamblia	Alveo. infect.	Neoarsphen.	Treatment stopped on account of jaundice, vomiting, fever, rapid pulse, etc.
81	F.	50	Type II Mult.	Am. coli	Alveo. infect.	Emetin	
82	M.	60	Type II spine	Am. butsch.	Alveo. infect.	Neoarsphen.	Treatment stopped on account of diarrhea and muscular weakness
83	F.	37	Type (?) Mult.	None	No alveo. infect.	Emetin	Slightly improved
84	M.	69	Type I Mult.	None	Previous alveo. infection, hypothyroidism	Emetin	No improvement
85	F.	40	Type I Mult.	None	Edentulous	Thyroid ex- tract	Marked improvement
86	M.	64	Type II sterno-clavicular	Am. butsch.	Alveo. infect., gc. infection	Thymus ex- tract	
				Giardia	Edentulous	Emetin	No improvement
				None		Neoarsphen.	Improvement

min. At the end of this course, lasting about two weeks, she started with emetin bismuth iodide, taking 3 grains each day at 2 a. m. After five days she was reported to be weak and nauseated, and the dose of emetin was cut down to 1 grain. After a few days the emetin was discontinued, and the patient entered the hospital with an intermittent pulse. She died eighteen days later, thirty-six days after the administration of emetin was begun.

After this fatality the daily practice of taking the patient's pulse and blood pressure during the emetin treatment was instituted, and of having an electrocardiogram before treatment was begun. There is a frequent fall in the blood pressure, and a frequent rise in the pulse rate. Either one is an indication to discontinue the emetin, temporarily at least. Dr. J. K. Lewis of the medical clinic and Dr. T. R. Haig of my clinic have this work in charge, and should be able to report some interesting results.

Some patients complain of temporary nausea immediately after the emetin is administered, and in several patients, mostly women, nausea and diarrhea have necessitated the discontinuance of the treatment.

The most frequent symptom following emetin, or coincident with its administration is the marked muscular weakness, which occurs most often during the time the patient is taking pills of emetin bismuth iodide. Sometimes the patient complains bitterly of this weakness, and although at first not inclined to pay much attention to it, I now consider it is important enough to cause the immediate discontinuance of the drug. Sometimes the weakness lasts for weeks after treatment is finished.

As to the effects of this treatment on the intestinal parasites, it is hard to speak positively. In a reasonable proportion of the patients followed up and re-examined, but not in all, the parasites had disappeared. I have lost all confidence in the efficacy of emetin in giardia infections, and now rely instead on three doses of neoarsphenamin at two-day intervals. With this treatment both successes and failures must be acknowledged. However, my primary interest is the efficacy of the treatment, not on the amebiasis, but on the arthritis.

Results on the arthritis side of the problem are shown in the synopsis. A considerable proportion of the patients cannot be located, and the results in them are consequently unknown. The symptoms of one patient evidently came from his intermittent claudication, and naturally did not yield to emetin. The anatomic changes in a second type arthritis are permanent. No treatment will ever restore the normal cartilage and bone, but if the symptoms disappear the treatment is worth while.

I have seen a patient with a severe second type arthritis of the hip, apparently doomed to resection, lose his pain, and go back to work, after the treatment here outlined, and after he had been told that the disease was too far advanced to expect help.

I have records of a number of patients with multi-articular involvement of the apparently hopeless variety who have been cured or markedly helped, and these are the patients who have tried everything others could offer. On the other hand, several pa-

tients of this kind derived no benefit whatever from the treatment.

The ordinary first type arthritis apparently has nothing to do with amebiasis. It is bacterial in its origin. There is a form of progressive multiarticular first type involvement, however, the kind which usually attacks young women, the American "arthritis deformans," which I believe to be caused by intestinal parasites, and assume that the inflammation is in the synovial membrane, and that the bone, not being attacked, does not react in the characteristic manner. When I see a patient afflicted with this disease recover, I must believe either that I am witnessing a miracle, or that the parasiticide drugs have cured. In the old days these patients did not recover. They slowly became worse, bedridden, and died after a longer or shorter time. There was no such thing as spontaneous recovery. Many of my second type patients are improved, some are symptomatically cured, some are not improved at all.

CONCLUSION

1. Emetin is a dangerous drug, affecting the heart, intestine, and muscles.
2. When cautiously and intelligently employed emetin has a distinct value in the treatment of chronic arthritis.
3. After an experience of almost two and a half years I shall continue to employ emetin in selected cases of arthritis.

SPECIMEN CASES

Mrs. H. T. E., 34 years of age, housewife. Chronic multiple first type arthritis.

This patient came to me from Doctor Heller of the Pueblo Medical Group. The case had been worked up thoroughly by Doctor Heller, who had also treated her most intelligently with the standard means. She had had from him and others diverse and thorough treatment, and had also gone the usual rounds of osteopaths and baths. The patient brought with her an excellent history showing that no pains had been spared in the matter of scientific investigation. The only things that I could discover in addition were that her thyroid was slightly enlarged, that she had two dead teeth, and that her stools contained amebae histolyticae. She received the full treatment with emetin hydrochloride, emetin bismuth iodide, and neoarsphenamin. She complained of weakness after about six doses of emetin hydrochloride, and the treatment was stopped for three days. At the end of the treatment her stools were negative, but she still had considerable pain. The joints looked better than at first. After about three weeks of thyroid extract and heliotherapy the joints were much better, but were still somewhat sensitive. I then gave the patient another course of parasiticide treatment. At the end of this she departed for her home apparently completely cured.

Mr. C. A. E., 41 years of age, pipe-fitter. Multiple, chronic second type arthritis. Duration of disease eighteen years, starting in the left foot and then involving the wrists, fingers, the ankles, toes, the neck, and the knees. This patient had been treated in many places, including some of the large clinics in the East. The only significant findings we made in his case were the presence of one dead and two abscessed teeth, and the presence of amebae coli in his stool. He received the usual treatment of twelve intravenous injections of 1 grain emetin hydrochloride, interspersed with neoarsphenamin, and followed with 3-grain doses of emetin bismuth iodide for ten days. At the end of the treatment the patient was enthusiastic about the result. The x-ray pictures in this patient's case showed very extensive damage to the joints. Both this patient and the preceding one were apparently hopeless cases.

To see a friend steadily and to see him whole is no little achievement. Ernest Sutherland Bates, Saturday Review.